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[From the German of Rev. Geo. Kleine.]

Practical Bee-Culture.

You will only be able to aspire to the title of an intelligent bee-keeper, when, in the management of your bees, you shall have made yourself independent of their lures and whims, and have learned so completely to subject them to your control as to feel assured that they will accommodate themselves to your plans, whatever system you may adopt. To this, however, you can only attain by employing the method of artificial swarming, which, as now practiced, must unquestionably be regarded as the greatest advance yet made in practical apiculture. The art of making artificial swarms is indeed not new; but it has received its full development only since the introduction of the Dzierzan system—which has enabled bee-keepers to multiply colonies by rule, and effect the designed increase at the most propitious period.

But, if the bee-keeper would operate with confidence, assured that the artificial colonies he undertakes to establish shall not prove to be miserable abortions, he must not work at random or be as one groping about in darkness. He must acquaint himself with the nature and habits of bees, understand thoroughly their peculiarities, and learn to know the circumstances under which swarms will prosper or perish, and be able duly to appreciate the surrounding influences, climatic or local, which may affect the condition of his apiary. Possessed of such qualifications, he will readily be able to adapt his processes, when multiplying stock, to the requirements of his situation—thus guarding against partial disappointment or utter failure.

Artificial colonies may be formed in various modes; but most simply and easily by means of a fertile queen, to which an adequate number of workers are apportioned. Time is thus gained, which is always an important element in bee-culture; and we may have our increase in a prosperous and advancing condition, at a period when it is wholly premature and unsafe to attempt artificial multiplication in the customary manner.

Should you unexpectedly come into possession of a fertile queen early in spring, long be-

fore natural swarms might be looked for in your locality, she should of course not be destroyed, but reserved to become the prolific mother of an independent colony, and be immediately put to active service. A colony formed by her aid will, if properly cared for, richly repay the attention it requires and receives, though for a short time it may involve some trouble. The bees to be allotted to this queen you will take from several of your most populous stocks, which thus deprived of only a comparatively small number of workers each, will hardly perceive or feel the loss—a loss moreover speedily made up by the maturing brood. To procure these workers you have only to open a hive, take out a comb well covered with bees, but not containing the queen, shake from it, into the hive designed for the new colony, such portion of the workers as you judge can well be spared by the colony to which they belong, and replacing the comb and closing the hive, proceed in like manner to deprive other colonies, till you have secured workers enough for your purpose. The hive into which the bees thus collected are shaken, should be furnished with two or three empty worker combs and one containing honey.

Though a fertile queen will almost invariably be kindly received by workers thus collected from different stocks, it is nevertheless safest to introduce her among them in a cage, leaving her in confinement until it becomes manifest that she will be accepted by her new associates. But a colony thus formed must be sent to a location at least a mile distant from your apiary; because the older bees, accustomed to a particular range of flight, would for the most part return to their old homes. Soon after reaching the selected spot and placing the hive in position, allow the bees to fly; and if the weather be favorable for a general issue, feed them with diluted honey to encourage nearly the whole mass of workers to take wing. They will thus at once acquaint themselves with the surroundings of their new home, and thenceforward regard themselves as one common family, though collected from many different swarms. The queen may soon after this be liberated, unless some of the workers make hostile demonstrations against her in the cage. The earlier in

the season an artificial colony is formed in this manner, by the aid of a fertile queen, the more frequently or more plentifully must it be fed, unless it can at the outset be adequately supplied with honey in the comb. It must also be carefully watched until the spring has fairly opened, and the workers can support themselves by their own industry. For this purpose it will be convenient if the hive be brought back to your own apiary, three or four weeks after the first removal.

If I obtain a supernumerary queen later in the season and at a more favorable period, I adopt a more simple and yet equally efficient process for making an artificial colony, which will not require removal from the home apiary. It is a more convenient mode, and one that rarely fails. I prepare a hive by putting in it four frames of worker comb, and place the queen, securely caged, between the two central frames. Then set it in the place of one of my most populous stocks, which latter I remove to some other location in the apiary. The foraging bees, returning to their accustomed home, find matters greatly changed indeed, and at first reluctantly enter the hive allotted to them; but finally, finding no alternative, yield submissively to the inevitable, take possession of their new quarters and go to work. For several days nearly all the bees that leave the parent stock resort to the old location and join their companions there; thus rapidly increasing the working force of the new colony, which having no brood to nurse, speedily accumulates stores. I usually liberate the queen on the evening of the second day. She promptly assumes the duties of her function, supplying the cells with eggs; and in three weeks, I have a fine strong independent colony, when perhaps most of the other stocks, allowed to indulge their own whims, have yet made no preparations for swarming.

The removed parent stock, which thus unconsciously supplied the bees required for the artificial colony, will for some days appear weak and inactive, as nearly all the old bees which leave it fail to return. But no uneasiness need be felt on that account. Bees enough will always remain to take care of the brood and discharge the required domestic duties; and as all the young bees adhere to the new location, and numbers are daily emerging from the brood cells, the population will soon be replenished. A strong swarm has indeed been virtually taken from it, yet the hive will really be in a better and more thriving condition, than if it had lost both bees and queen by natural swarming.

That for such transposition only populous stocks can be selected, and that a fine clear day when the workers are busily gathering honey must be chosen for the operation, need hardly be mentioned, as that is sufficiently obvious. If a supernumerary fertile queen be obtained at an unfavorable period, or when the weather is unpropitious, it will be advisable to adopt the previously described method—making an artificial colony by collecting bees from several hives, and sending the swarm thus formed temporarily to a distant location.

But it oftentimes happens that we have no su-

pernumerary queens at command, when it is desirable to multiply stock. We are then constrained to resort to other modes of making artificial colonies. The following is alike simple and efficient. I remove about one-half of the combs containing brood from the hive I propose to divide, placing them with the adhering bees in a hive designed for them, which is then to be filled out with frames containing empty worker combs. Setting this hive in the place of the parent stock, I remove the latter (which must retain the queen) to a new location, after having inserted frames with worker comb to replace the brood combs abstracted. For several days the parent stock will be losing numbers of its older bees and appear weak and languid, but will speedily be replenished by the daily maturing brood. Besides, as it retains the old queen, eggs are constantly being laid and the population thus renewed and increased. The new colony, in addition to the bees adhering to brood combs given to it, receives for days in succession a constant accession of workers from the parent stock and from the maturing brood. Thus, by the time a young queen is hatched and fertilized, the colony will have a sufficient working force for collecting stores abroad, particularly as for some time there will be no young brood requiring attention. If a royal cell containing an embryo queen nearly mature, can be procured and inserted in such an artificial colony, the term of interregnum may be much abbreviated, as a fertile queen will thus be secured several days sooner than by the natural process of queen raising. The young queen may in some instances issue on the following day; and if the weather be propitious she may be fertilized and commence laying within a week after the operation.

I usually provide myself with royal cells by removing the queen from some populous stock eight or ten days before I propose to form artificial colonies, thereby inducing the deprived stock to commence rearing queens. In most instances more royal cells will be built than are wanted for that stock, and I appropriate the surplus for my own purposes. As soon as they are closed, all save one can be removed and inserted in artificial swarms, or nucleus colonies for reserved queens. If cut out carefully with a sharp penknife, leaving attached to them a portion of the comb on which they are built, a hole of similar size and shape may be cut in the comb in which they are to be inserted, and thus securely placed. The bees will usually fasten such cells, if only properly set in the opening, or they may be attached by touching the wax at the junction with a heated knife-blade.

It happens sometimes, however, that the bees of an artificial colony do not content themselves with the royal cell thus inserted, but build some in addition, if they have suitable worker brood. If this is not seasonably discovered, it may furnish the occasion and inducement of natural swarming, which, under the circumstances, would be injurious to the colony. I therefore always use the precaution to examine the combs repeatedly, at intervals of two or three days, destroying any queen cells that may be started.

When I stated that I remove from the hive intended to be divided about one-half of its combs containing brood, for fitting up the artificial colony, it was probably thought that I make too heavy a draft on the former. There need be no uneasiness on that score, in any such case. If in a condition to swarm, the stock can readily bear the deprivation without injury, provided the division be not made at an improper time. But, if unwilling to remove from it so much brood and so many workers, you may, if you prefer, restrict yourself to the abstraction of bees alone, and take the needed brood from some others of your strong colonies. The artificial swarm thus built up will thrive equally well. You may even let the adhering bees remain on the brood combs; being for the most part young bees, they will be kindly received in their new quarters, and if some of the older ones happen to be transferred at the same time and meet with a hostile reception, they will quickly leave for their proper home.

Your artificial swarms will certainly succeed and thrive, if you follow these instructions, and do not undertake to operate prematurely. Wait patiently till your stocks have become sufficiently populous to warrant the expectation that they would ere long swarm; and then be careful to undertake division only when the season is sufficiently advanced and the weather will permit the bees to fly. A single day of auspicious weather will secure the success of your experiment.

In like manner you may divide all the colonies in your apiary, and double your stock annually. But therewith you must resolve to be content, without allowing yourself to be tempted to hazard a larger or more rapid increase; or you may find yourself constrained to re-unite your weak colonies in the fall, or run the risk of seeing most of them perish in the ensuing winter.

There is nothing so disastrous to new beginners in bee-culture as the overweening desire to be the owner of a large number of stocks. If indulged, it invariably and infallibly leads to disappointment and loss. Whereas a rigid adherence to a plan which gives a regular moderate annual increase, is the sure mode of creating and permanently maintaining a large and profitable apiary. Let this counsel be deeply impressed on your memory. It is the most important and valuable that an experienced bee-keeper can give, or a novice receive. Not the number of your stocks should elicit your pride, but their intrinsic excellence. On the latter only can you base your hopes of the enduring prosperity of your apiary, or of remunerating success in your business.

A discarded queen will either be stung to death by the workers, encased and smothered by them in a cluster, or driven out and excluded from the hive.

As soon as the internal temperature of a hive rises to 100° F. the bees cease working, and many of them cluster idly on the outside.

[From the Bienenzeitung.]

White Melilot.

Much has been said about White Melilot (*Melilotus alba*), as a forage plant affording abundant bee-pasturage. Some regard it as valuable for both purposes, while others think it of no account except in the latter aspect. Both may be right according to the circumstances under which it is cultivated. In some districts, it is said, cattle reject it, whether offered to them in a green or a dry state, while in others, it is stated, they will eat it greedily. I have no doubt both statements are correct, and based on careful observation. The soil in which it is grown makes all the difference.

One of my friends procured seed from me. Some of it was sown on low, moist, sour meadow land; and some on well cultivated sandy soil. Visiting me some time ago, he remarked that the melilot on the meadow land was growing with great luxuriance, but his horses and cows would not eat it; while that from the sandy land was consumed eagerly. He said, moreover, that the meadow had previously produced nothing but sour grass, which the cattle would not eat; and it had, for that reason, been plowed and sown with melilot, in the hope of obtaining from it a more acceptable product, as the hay previously made there could only be used for litter.

Again, in my own immediate neighborhood, there is an extensive range of meadow land; but the plants and flowers found on it naturally yield very little honey. To a point where the deep, moist alluvion enroaches on and covers the drier upland soil, the grasses growing on the former, though to all appearance precisely the same as those found on the latter, are refused and rejected by horses, cattle, and sheep. If mown and made into hay, it is either sent by the proprietors to the distant city market, or retained and used merely for litter. Such is the influence which some soils exercise on the crops grown on them, and melilot seems to be one of the plants peculiarly liable to be thus affected. If to be used for fodder, it should moreover be cut young. If allowed to attain its full growth, the stems become hard and ligneous; which is the case also with Lucerne grass.

At an agricultural meeting in Magdeburg, Mr. Knauer, well known as an intelligent farmer and bee-keeper, warmly recommended the cultivation of white melilot. When I objected that cattle would not eat it, he replied that it was very productive, that he fed the hay to his sheep, and that it was readily eaten by them.

I have not myself been in a position to cultivate this plant on a large scale, but have a small patch of it near my apiary, which when in bloom is frequented by astonishingly large crowds of bees. Visitors have often expressed their surprise at the sight, and declared they had never seen the like before. A bee-keeper who should sow even a quarter of an acre with melilot, would provide three months of most excellent and abundant pasturage for his bees; and the increasing demand for seed among farmers shows that its value and importance in

other respects, is coming to be more generally understood.

My friend, B. Bause, has cultivated melilot three or four years. He says it has proved itself very superior for bee pasture; and cows, goats, and sheep eat it freely. His brother has had equal experience in its cultivation. He states that it furnished ample and acceptable fodder for his cows, and that his bees foraged on the blossoms continuously for more than three months. A square rod yields about six pounds of seed.

In conclusion, I would say let farmers and bee-keepers try melilot on various kinds of land; and then cultivate or reject it, as they may find it adapted or not to soil and climate.

F. BAHR.

[For the American Bee Journal.]

Wintering Bees.

MR. EDITOR:—I hope that all bee-keepers will act on the suggestion made by Mr. Hardesty in the April number of the BEE JOURNAL, and give us their manner and success in wintering bees the past winter. I consider that one of the most important things for successful bee-keeping is to learn how to winter bees properly. In this country (Canada) more bees are lost from bad wintering, than from all other causes combined; and a large number of the colonies that manage to live through the winter, are weak in numbers in the spring and short of honey. They consequently require feeding for a month or six weeks, at the risk of being robbed by more fortunate colonies, or are destroyed by the worms. Such bee-keeping is both vexatious and unprofitable. Hence the question arises, can it not be avoided? I think it can, with a proper place for wintering, and a little care and judgment in fitting colonies for winter confinement. Now if all the bee-keepers who read the BEE JOURNAL, will describe their method of wintering, the number of stocks lost, and *if possible* the cause of their dying, we should then soon be able to learn the best way of wintering our bees. This would be a very important step gained towards success.

I will give the mode of wintering I adopted last fall, and the result. I had twenty-eight colonies, all of them Italians, or at least the most of them, and the rest hybrids. All of them were in J. H. Thomas' movable comb hives. On the eighteenth of November, I put them into a cellar, built like a root cellar. The sides were planked up with seasoned pine planks, and the floor of the same material; the top planked over, and covered with dirt; and ventilated at the end. I removed the honey boxes and tacked a piece of fine wire gauze over the holes in the honey board; and then packed corn cobs on the top of the hives, as many as the covers would set over. With the cellar perfectly dark, and the thermometer ranging from 34° to 38°, they spent the long cold winter of 1867-8, undisturbed.

On the twenty-third of March, I set them out, and found them all (with the exception of two

colonies) in a splendid condition. One of the two exceptions referred to was dead, leaving plenty of honey. Cause, a *small colony of bees* when put into winter quarters, with *too much ventilation*, consequently *too cold*. The other hive had a very strong colony of bees, and was very full of honey when put into winter quarters; but came out reduced in bees, and short of honey; combs damp and mouldy. Cause, *not enough ventilation*, consequently *too warm*. The other twenty-six were in good condition, as already stated, with plenty of honey, and some to spare.

Now is there anything to be learned from my last winter's experience? I think there is. *First*, when preparing our stocks for winter, we should ascertain how many we have that are short of bees or honey, and give them a little better protection, and *considerably less ventilation*. *Second*, if we have a very strong and heavy colony (especially if Italian) we would give it *more ventilation*. Perhaps, in the latter case, it would be advisable to take off the honey board altogether, and cover the top of the hive with fine wire cloth, to prevent the bees from coming out.

I, for one, am very anxious to see, in your valuable JOURNAL, the experience of every practical bee-keeper on wintering bees. I think we could then come to some very important conclusions, in regard to wintering our colonies successfully; and on that depends to a great extent our success in bee-keeping, especially here in Canada.

H. M. THOMAS.

BROOKLIN, ONTARIO.

[For the American Bee Journal.]

Wintering Bees.

It has been my practice heretofore to carry all my bees into the cellar about the tenth of December. With the hives I chiefly used, I found the operation quite objectionable—*first*, because of the heavy lugging; and *secondly*, because, to my great dissatisfaction, there would almost always be more or less of the combs mouldy in the spring; and this, too, notwithstanding an apparent sufficiency of upward ventilation. I therefore determined, last fall, to try the experiment of wintering a few on their summer stands. For this purpose I selected five colonies—two of them Italian hybrids, and all in hives that had been constructed with a special view to afford, among other advantages for convenient management, particular facilities for protection in winter. Above the combs I placed corn cobs, for the purpose of absorbing the moisture, and then sticks set slanting against the hives to secure a dead air space, against which I placed straw and litter, and then banked up with chip dirt to nearly the height of the hive—placing a lock of prairie hay over, to shed off the water from rains and melting snows.

Thus protected, I left them undisturbed until about the twentieth of March, when a warm day occurring, I opened them to ascertain with what degree of prosperity or adversity they had passed their long cold winter night.

The first one opened was found in a fair con-

dition. The cobs were quite damp; there were more dead bees than I had expected to find; and there was apparently a greater consumption of stores than in hives kept in a cellar. Another was found in a similar condition; but a third, owing I think to an accident that occurred to two of the combs a few days before they were put up, and the unfortunate course they had taken, were in a bad condition; the larger part of the bees were dead, and this too with plenty of stores in the hive. I overhauled the combs, and discovering that the queen was still alive, determined to see if with careful nursing, they would recuperate. I set them out on warm days and indoors at night, till on going to the hive one day towards night, for the purpose of carrying them in, I found no bees in the hive, except a few young ones, which were crawling about in a disconsolate mood. There was some brood and plenty of stores, but the swarm had gone, being I suppose dissatisfied with my nursing. Some three or four days after, during which time the nights had been cold and frosty, my son accidentally discovered about sunset a cluster of bees about the size of a large coffee cup, in a little twig of dry leaves lying on the ground under an old shed in the calf pasture. He called my attention to them as a curiosity, and I immediately surmised that they must be my decamping swarm. Taking a nucleus box with stores, I put them in. They seemed joyful enough at first, but on being set in a wood shed they soon were all out, crawling and buzzing as though they did not feel quite satisfied. The next morning, they were quietly clustered among the combs. I set them out and am still watching to see if they will recuperate, though I feel quite sure they will not.

In the February number of the current volume of the BEE JOURNAL, if I mistake not, there is a communication from the Rev. L. L. Langstroth, in relation to a matter that should receive the attention of bee-keepers which its importance demands—namely, the loss of bees by expansion and contraction of the cluster among the combs, during changes that occur in the weather. As I mistrust that Mr. L., to whom we are so much indebted for the introduction of movable combs in this country, has a plan of obviating the difficulty, perhaps I should show proper respect by waiting till he promulgates his remedy. But as he has invited discussion on the subject, I venture a few suggestions, not only to the attention of Mr. L., but also to the criticism of all the sharp and knowing ones; promising not to be offended with whatever comments they may honestly make, with a view to remedying the evil.

My plan is simply this: to take out the side combs and leave so few through the middle of the hive that the cluster will always extend beyond them. Have your swarms populous, and your hive so constructed that you can place some well filled combs directly over the cluster; and in the surrounding space place some material that will absorb the moisture from the breath of the bees. Then, with suitable protection on the outside, your bees are safe.

S. L. RICHARDSON.

WEBSTER CITY, IOWA. April 13, 1868.

[For the American Bee Journal.]

Experiments in Wintering Bees.

MR. EDITOR:—On the 12th of November, 1867, I weighed twenty-four hives of my bees; nine of which I buried on the same day, in the manner described by Charles Dadant, in the BEE JOURNAL for that month, page 91. On the 29th of November, I put the other fifteen hives into my cellar, under my house, where I kept vegetables, &c., for family use.

March 13th, 1868, I removed them all to their summer stands. It being a pleasant day, the bees improved the time in open air exercise. On the morning of the 15th, after cleaning the bottom boards of dead bees and all filth, I again carefully weighed them.

The weight given below is that of the bees, combs, and stores, in each hive, at the time indicated.

When my hives are ready for the reception of the bees they are all weighed, and the weight marked on the hive. This I find very convenient sometimes in my operations with them.

The stocks marked I are Italians; those marked H are half breeds; and those marked B are black bees.

IN CELLAR.

No. of Hive.	Nov. 11.		Mar. 14.		Loss.	
	lbs.	oz.	lbs.	oz.	lbs.	oz.
H. 1....	52.....	8 37.....	12 14.....	12 4.....		
B. 2....	45.....	4 31.....	0 14.....	4 8.....		
B. 3....	43.....	0 30.....	8 12.....	8 10.....		
B. 4....	47.....	4 36.....	8 10.....	12 12.....		
B. 5....	47.....	4 30.....	8 16.....	12 8.....		
B. 6....	43.....	0 27.....	8 15.....	8 0.....		
B. 7....	49.....	4 37.....	4 12.....	0 12.....		
B. 8....	41.....	12 29.....	12 12.....	0 0.....		
H. 9....	34.....	0 23.....	0 12.....	0 4.....		
I. 10....	40.....	4 33.....	0 7.....	4 13.....		
B. 11....	52.....	4 39.....	0 13.....	4 8.....		
B. 12....	33.....	0 23.....	8 9.....	8 4.....		
H. 13....	43.....	4 37.....	0 6.....	12 13.....		
B. 14....	24.....	0 17.....	4 6.....	12 13.....		
B. 15....	43.....	12 30.....	0 13.....			

Total..... 177.... 4

Average per hive..... 11.... 13

BURIED.

No. of Hive.	Nov. 12.		Mar. 14.		Loss.	
	lbs.	oz.	lbs.	oz.	lbs.	oz.
B. 1.....	42.....	12 35.....	8 7.....	4 12.....		
B. 2.....	47.....	8 37.....	12 9.....	12 0.....		
B. 3.....	45.....	8 34.....	8 11.....	0 4.....		
B. 4.....	48.....	12 39.....	8 9.....	8 8.....		
H. 5.....	42.....	12 36.....	4 6.....	8 4.....		
B. 6.....	47.....	12 38.....	8 9.....	4 4.....		
B. 7.....	41.....	8 32.....	4 9.....	4 4.....		
B. 8.....	30.....	8 21.....	4 9.....	4 0.....		
B. 9.....	28.....	4 22.....	4 6.....			

Total..... 77.... 8

Average per hive..... 8.... 10

No. 4, in the cellar, and Nos. 1, 2, 3, 4, 5, and 6, of those buried, were box hives. All the rest were movable frame hives of the Quinby form. Caps and honey boxes were removed from the box hives, and the holes left open. Honey boards were removed from the frame hives, and all entrance holes left open.

Fewer bees left the hives of those buried, than of those put in the cellar; and there were fewer dead bees in the hives.

Too much ventilation in winter, I believe, increases the amount of honey consumed, and the number of bees that die. I doubt the utility of a circulation of air through the hive. Either the top or bottom of a hive, I believe, should be closed air-tight, or nearly so.

I should like to see the experience of others, in this direction, published in the JOURNAL.

AVERY BROWN.

DELAVER, WIS.

[For the American Bee Journal.]

Ventilaing Bees.

MR. EDITOR:—I crave a small space in your valuable JOURNAL, in reply to Mr. Adair's article, in the April number, on ventilating bees.

In his article in the February number, 1868, he says:—"If these learned apiarians would go out into the rural districts, and there talk of smothering bees to death, they would be laughed at for their ignorance."

It was to those people that I referred when I said, "the ignorant are wise in their own conceit," and not to Mr. Adair personally. But if he chooses so to apply it, I have not the slightest objection, as when he undertakes to convince practical bee-keepers that bees cannot be smothered, it seems to bespeak a want of due information on the subject himself, or that he relies much on the ignorance of his readers. Possibly he has a different variety of bees. Or, does he claim it as a patent peculiarity of his "Section Hive" that bees can live in it without air?

I thank him for his advice to "think and experiment a little for myself, and not believe all that is taught by others," &c. But does he really think any one acquainted with the physiology of the bee, will have the credulity to believe that they cannot be smothered? There are too many bees lost here, in New England, by smothering particularly when wintered out of doors, for his statement of facts, which are such conclusive evidence to him.

I might refer to quite a number of mishaps of my own; of having occasionally lost a fine stock by the entrance getting closed accidentally, when there was no upward ventilation; and sometimes by ice closing all the air holes; when I would have the mortification of finding every bee dead, for the want of fresh air and *nothing else*. And how many are there that have kept bees any length of time, who have not had the like "mishaps?" Again, a single glance at a full hive on a hot day in June, shows that a portion of the busy workers cease other labor, to attend to that all important requisite—supplying the hive with fresh air.

Claiming no superiority over any one, I am perfectly willing the subject should rest on its merits with intelligent bee-keepers, as presented in the articles referred to. I am always willing to be taught, and am quite ready to place my experience and success by the side of Mr. Adair's; although my experience has been with bees that *could* be smothered, and such as could sting *without first discharging the honey from their sacs*.

Now, Mr. Editor, anything personal in a public journal is decidedly out of place, and generally of little interest to others. But your Kentucky correspondent, after acknowledging that the best and wisest in bee-culture teach directly contrary to the absurd idea he advances, brings my name before your readers, with a slur. Still I will drop the subject, and write of something of more general interest.

Bees have wintered better here, notwithstanding our unusually cold winter, than is usual in this section of the country. The temperature was more uniform than for many years before; and about the 20th of March, we were able to get our stocks out of winter quarters, which is about ten days sooner than the average of years past. The most of my stocks are in the standard Langstroth hive, and in preparing them for winter, I removed the honey board, putting on a frame filled with a double thickness of corn cobs. This I like better than putting the cobs immediately on the top of the movable frames, as it allows free access across the top of the frames, and permits the bees to cluster closer to the cobs. I then returned the super, which has an inch and a quarter hole bored in each end, just below the top, for ventilation.

Of thirty-six stocks in an underground clamp, put in in that way, all came out in good condition, and with more or less brood. I also had two straw clamps above ground. In one of these I placed a few stocks just as they came from their summer stands, without any upward ventilation. These wintered the poorest of any.

The temperature in the underground clamp scarcely varied a degree during the entire winter, being about 34°. I think as much judgment is required in putting bees in winter quarters, as in any other part of their management. To attempt to winter them out of doors, in our cold climate, and expect good success and profit, too often proves a failure.

I would like to hear from others on this subject, through the BEE JOURNAL.

D. C. HUNT.

SHARON, VT.

When the larvæ of the bee has attained its full growth, and the cell is sealed over or capped by the workers, it spins its cocoon, and assumes the pupa or nymph state, preparatory to its final metamorphosis. The worker and drone larvæ spins an entire cocoon, that is, one in which the pupa is completely enveloped. The queen, on the other hand, spins one enveloping only the head and thorax, leaving almost the entire abdomen bare or unprotected. When the insect is mature, it emerges from the cell, leaving its cocoon attached to the base and side-walls of the cells.

[For the American Bee Journal.]

Wintering Bees In Cellars.

J. R. Gardner, Esq., on page 92 of the *BEE JOURNAL*, vol. 3, in an article on wintering bees, desires that I might give my way of packing bees in my cellar. I do it cheerfully. The cellar in which I wintered the stocks of my home apiary—393 in number—is 18 feet wide, 27 long, and 7 deep. Over it is a small frame house of the same size, for storing hives, boxes, and other articles. Only one room is plastered. The floor is of one-inch boards. In this there are two holes cut for ventilation, each nine by ten inches. The cellar is situated in the side of a hill. The east side of the wall is partly in the ground. An entrance, level with the bottom of the cellar, on this side of the wall, is provided with two doors, the inner one of which has a hole, nine by ten inches, near the bottom, for ventilation.

I usually commence wintering-in my stocks on the 1st of November. They are piled in in a single and two double rows, as close together as practicable, leaving a narrow passage way between the rows, for an occasional visit of inspection. The Langstroth hives I piled up five high, beginning on the floor of the cellar, without anything under them. The box hives I piled four high, all inverted, with their bottom boards on. They had no opening at the top, nor the bottom. The summer entrance, now at top, was the only ventilation they had. Almost all the bees in these hives clustered on the bottom boards, near the entrance. During very cold weather the temperature fell nearly to the freezing point, in some instances. I repeatedly lifted the bottom boards, and found them dry where the bees were clustered, but full of drops of water outside of that space. Towards the end of January, sweetened water ran out of the tops (now bottoms) of these hives; and as this was the first time I wintered my bees in this way, I was afraid there was something wrong. But, on wintering-out, I found all of them, except three, in the best order. One of these three had become somewhat mouldy. The other two had died from starvation, with plenty of honey in the combs. They had clustered on the bottom board away from their stores. All the rest of the stocks were apparently stronger than when put into the cellar.

The Langstroth hives I pile up without inverting them, and without taking off the honey board. I simply insert quarter-inch blocks under the honey boards at the back end of the hive. The entrance I contract, so that only an opening one inch wide is left. I lost only two stocks; one by dysentery, and the other from some cause unknown to me. The Langstroth hives had less brood when wintered out, than the box hives. I would further state that only a few had become mouldy, and those had no blocks under their honey boards. Three or six one inch holes in the honey boards had not given as effectual ventilation, as the blocks under the honey boards in the other cases.

Out of forty-nine swarms wintered under

ground, three died, with plenty of honey. Almost every hive had more or less mould. I do not like this way of wintering bees.

The cellar for my northern apiary, which was constructed in September last, proved to be too damp. Some stocks had become very mouldy, and finally died of dysentery. From this cause I lost twelve hives out of one hundred and sixty-three; and five more from queenlessness, since wintering them out. It seemed singular to me that some stocks had become very mouldy, while others standing right by their side had not a particle of mould, nor hardly any dead bees. On an average the living stocks appear in very good condition. Those of my neighbors around here, who wintered their bees on their summer stands, lost from one-fourth to one-half of their stocks.

ADAM GRIMM.

JEFFERSON, Wis., April, 1868.

[For the American Bee Journal.]

Wintering Bees in Minnesota.

The bee-business has suffered much in Minnesota during our cold winters. How shall we winter our bees? is the great question here. A gentleman in St. Paul gave us a long article on wintering bees, by burying them in clamps. This plan proved almost a failure last winter. Two men who have met with some success, thought they had found out the best plan of wintering bees here; which was in cellars in the side of the bluff. Last winter they lost 172 stocks out of 300, which had been put in three cellars of this description in the fall. One of my neighbors lost 47 out of 50 stands placed in a granary, the walls of which were filled with saw-dust. The granary was raised a little from the ground. A farmer in the next county placed his hives in the basement of his stone barn, and lost 40 stands, being all he had. Others have shared a similar fate.

I built a bee-house last fall, to winter bees in, with a cellar under the hives, and a chamber over them filled with straw. The walls are packed with saw-dust; and the flues are so arranged that warm air from the cellar, or cold air from the outside, can be let in, and pass off through the straw and roof. In this I placed seventy stands of Italian bees. Thus far, it more than meets my expectations. I made my calculations to keep the temperature as near 30° above zero as it could be. Placing the thermometer on a pillar about the centre of the bee-house inside, in December it stood 33° above; and in January 28° above. On the outside it has been as low as 40° below. On the 23d of February, when I went in to give them water, the thermometer stood at 29° above. This month (February) it has been as low as 30° below on the outside. When I gave them the wet sponge, they all answered by coming up promptly to quench their thirst.

THOMAS J. SMITH.

RED WING, MINN.

In some exceptional cases, a few drones will be retained over winter in populous hives having a fertile queen.

[For the American Bee Journal.]

Wintering Bees.

Will any of your many experienced correspondents favor us with an article on burying bees in a trench, for the benefit of myself and other inexperienced bee-keepers—how they ventilate, and with what success? I see by reading your JOURNAL that the cellar seems to be preferred; but all have not got a cellar suitable for keeping a large stock of bees.

Last winter I buried my whole stock in a trench, with ventilation alike in all. Some stocks were strong, others were weak young ones. The strong stocks were placed at one end of the trench, which was protected from the winds, and was consequently the warmest part. The weak stocks were more exposed, but wintered the best. In one of my best stocks I neglected to arrange the ventilation tube. Consequently it was nearly shut out from air, or an accession of fresh air. This spring the bees of that stock were nearly all dead, only about a quart remaining; which were badly off with dysentery. I concluded the cause was want of air. Mr. Adair's article in the April number of the BEE JOURNAL puts me in doubt. Will Mr. Adair explain?

E. SHULZE.
BROWNSVILLE, IOWA.**Wintering Bees.**

A number of years ago, I accidentally discovered that a bee hive under cover, where rain or snow could not fall on it, might stand with the lid or cover off, entirely open, through the coldest weather, and no frost or wet would accumulate in the hive. Having made this accidental discovery, I concluded next winter to put it in practice. I had a narrow shed, just long enough to hold eighteen hives, the ends and one side were already boarded up. I boarded up the other side, leaving a door to go in at; made it it as tight as I could with common rough boards: still there would be some cracks through which the light peeped in. I took the covers off all the hives, they stood there all the winter perfectly dry, not a particle of wet or frost was to be seen about them, but some of the bees would get out at the cracks on bright days, and were lost, because they could not find the way back again. Very early in March they became so restless and so many would get out, that I was compelled to put the covers on, to open the front of the shed and let them go. I thought, then, that if I had something to put over the hive that would keep it dark, and yet let the damp vapor pass off freely into the open air, I should have just the thing that was wanting, but it cost me several years of study and experiment to make that discovery.

W. Y. SINGLETON.
SPRINGFIELD, ILL.

Queens may attain the age of five or six years. But usually they die in the third or fourth year.

[For the American Bee Journal.]

Want of Air, and Upward Ventilation.

Facts are consistent with truth, and so far as we understand the truth we can explain the facts.

Mr. Adair says bees live without air. But oxygen and carbon sustain animal heat essential to life, and when the animal is hot a much greater amount of oxygen is needed; witness the panting of a dog after a race. The bees which Mr. Adair says had plenty of air, were probably smothered. If bees cannot get out where they see light, they become alarmed, and crowding there prevent the admission of air, while the struggling thousands behind them perish. Bees may worry to death against a window, or the glass side of a cap. It is not a natural position, and puts their instinct at fault. They obey the law of their nature. The bees which Mr. Adair says lived without air, were few in number, a part having made their escape. The hive contained some air; and the light being excluded, the bees were quiet and needed little air. But I must be allowed to doubt their being in air-tight confinement.

The remarks of Bruckish, (Patent Office Report, 1860, page 270), are strange. Only two hives, probably covered with boards, containing a large air chamber outside the hives, buried also in dry earth through which oxygen penetrates freely, seeds germinating six inches deep—thus placed, the bees would have plenty of air. But fine swarms outdoors, with fly-holes only at bottom, are smothered every winter, in the first severe cold snap; for then they must have more air to generate more heat. But the bees below, driven up by cold, pack closely and exclude the little air they have. If Mr. Adair will hold a feather at the fly-hole of a hive before swarming, he will find there is a strong circulation of air.

Mr. Grimm states that in the warm cellar his bees wanted water, and did not get the dysentery. This was because they were warm enough to perspire freely, not using much honey and air to generate heat, they did not generate much water. If the outer air had been below 45°, they would be quiet, if the tops were tight. In a cold cellar, with nine holes in the honey board to let off the moisture, the bees raised brood, and he thinks without water. As bees increase most in wet seasons, and Bruckish says they stop breeding in time of drouth in Texas (Patent Office Report, 1860, page 275), and Dzierzon says they must have water (BEE JOURNAL, 1861, page 148), and the young bee is mostly water, I will try to explain how they get it. As the heat passes off nearly as fast as generated, the outer or surface bees are cold, (see remarks on temperature, Patent Office Report, 1860, page 90), and form a compact crust. Consuming great quantities of honey and air to generate heat, they are full of water, and could only avoid the dysentery by sweating freely in the centre of the cluster, where they are warm enough; while the temperature beneath the crust is low enough to condense vapor, for dew falls in a warm sun-

mer night. (See Langstroth, for opinions of German writers on this subject.) If it were not for the fact that the bees may chill in a temperature one degree above the freezing point, remain so for thirty-six hours and still recover, they could not endure the evil effects of upward ventilation, for their vital temperature is about that of the human body. There is an account of a buried swarm in England, living two and a half months on three ounces of honey. Mr. Adair says they can live without air, the source of water. It seems the way to keep them dry is to keep them warm.

No doubt upward ventilation saves the uncovered comb from mould, as it is colder and the exhalations that escape the bees pass off. But the cold compels the bees to pack closely, confining the moisture among the bees. The inner bees want air, and the outer ones honey and warmth. The inner bees burst through the crust to get air, thereby warming the outer bees and enabling them to come to the centre for honey and protection, before death ensues. These great and frequent agitations shorten the term of life, and destroy the vigor for spring labors. With air-tight tops the bees are warm, cluster loosely, require little honey or air, seldom need to change places, and can do so without much disturbance.

I was an upward ventilation man, but found on examination, it was not only contrary to nature but to all kinds of common sense.

F. H. MINER.

LEMONT, ILL.

[For the American Bee Journal.]

Producing Fertile Workers.

I noticed an article in the March number of the BEE JOURNAL, from the pen of Mr. Townley, under the above head. Although he is a very good reasoner, yet I cannot fully agree with him. Wishing to be as brief as possible, I must refer the reader to his article, and not go over his ground. He says:—"It will at once be seen that none of these workers, when in a larva state, could even have tasted royal food;" and further, "I have since had such workers, under similar circumstances, when I was quite certain they never had been fed royal jelly."

Now, how could Mr. Townley be certain that they never tasted royal food, or through what means the royal food is given them? I am quite satisfied they had the necessary food, from the fact that they were developed to fertile workers or queens. Again, there being no queens in his artificial swarms, is not a proof that the larvæ were not fed royal food from royal lips, for it is not the queen's place, nor is it her nature, to feed and nurse a royal rival. It is the duty and function of the worker bees to furnish the royal food; and it is not likely that this food is laid up in store, but is prepared and supplied as wanted.

J. N. CLARKE.

CALEDONIA, ILL.

He who with health would live at ease,
Should cultivate both fruit and bees.

[For the American Bee Journal.]

How I became an Apiculturalist. No. 3.

Looking forward to the swarming season, and believing it impossible to watch my roof-standing hive properly at that interesting period, I conceived the idea of resorting to artificial swarming. Feburier, in his treatise on bees, gives all the necessary information, and following that author closely, I manufactured two leaf or Huber hives, with some important improvements. The hives were constructed of eight frames fastened together by two iron rods, and covered with an outer box. Into one of these hives I was to transfer my colony, and the other was to receive the expected swarm.

In April following, after many delays as I was reluctant to disturb my bees, on a bright morning I ascended the roof with all the apparatus supposed to be necessary for so big an operation. After blowing some smoke in at the entrance, according to the instructions of the book, I inverted the hive. But like all beginners, I acted with too much precipitation; for before the empty box could be properly adjusted over the inverted hive, a multitude of bees rushed out in anger, assailing and stinging me on all sides. Never before had I been in a similar situation. Like a recruit in his first battle, I was ready to flee from the spot. But, reflecting that my comrades, who were always ready to quiz me about my hobby, would never cease teasing me if I now shrank from the undertaking, and unwilling to become their laughing-stock, I persevered firmly, though multitudinous stings were piercing me through my clothes. The result was a complete success. Everything turned out as the book had predicted. The bees were driven out by my rapping, and I could cut the combs and fix them in the frames, with no further difficulty. The bees being soon gorged with honey, became peaceable as flies, and I ventured to dispense with my gloves and throw off my wire mask.

Eight days thereafter I disturbed my bees once more, to remove the fastenings from the combs. All was right, and I was quite elated with my success, so that I disregarded and scarcely felt the numerous stings with which the bees complimented my visit; for deeming the smoke needless and inefficient, I had opened the hive without preliminary precaution. This disrespectful treatment so irritated my bees and fixed their ill temper that for weeks after I could not show my head on the roof, without being at once rancorously assailed.

Three weeks subsequently, observing some bees clustering out, I resolved to divide the colony. I was the more ready to undertake this, as I was to be absent some fifteen or twenty days on a canvassing jaunt. By reperusing Feburier and some other apicultural works, I had acquired a better knowledge of bee management, and went to work with more calmness and deliberation. Using smoke I opened the hive, loosened the frames, and searched the combs for young brood, without irritating the bees. Good weather previously having favored the blossoming of the rape, forage was abund-

ant, and the cells were so filled with uncapped honey, that suitable brood was scarce, only one comb showing eggs and larvæ. Rapping smartly on the opposite side of that comb, (for Feburrier claimed that those raps would attract the queen), I put one half of the combs, with the bees attached, in my new hive, and fitted the two hives with empty frames. Then placing them one foot on each side of the old stand, I watched to see the bees divide equally between them. The next day all seemed right, to my inexperienced eyes, and I started on my journey with entire confidence that the work had been well done.

On my return I found my new hive covered with clustering bees; but as for the old stock hardly a bee could be seen entering or issuing. I raised the outer box and opened the hive. It contained neither bees, nor brood, nor honey; but a large number of moth worm in various stages of growth. I had evidently put the queen with the brood, leaving the old stock without the means of raising another. I resolved to repeat the operation more carefully, and undertook the tedious task of picking out all the worms, and destroying them.

The ensuing two days were rainy. On the third, as I was making preparations to re-divide, I was informed that my bees were decamping. Indeed crowds of them were already hovering in the yard, and I soon saw many enter, by an open window, a second-story room in a neighboring house. A woman and two boys, occupants of the room, were quickly busy, with cloths and broom, endeavoring to expel the intruders. I hastened to the scene, and on my arrival, saw a small cluster hanging in the embrasure of the window, and the disturbed bees dispersed through the room, while the woman and the boys were severely stung in their efforts to dislodge the unwelcome visitors. With much ado, I succeeded in persuading the woman to leave the bees in peaceable possession of the chamber a short time, till I could make arrangements for their removal—promising that she should be rid of the annoyance before noon. I then proceeded to extract the stings from the three victims. Here let me remark, by way of parenthesis, that usually the stinging bee leaves in the flesh the sting with the vesicle or sac containing the poison attached. If the sting is not extracted immediately, the vesicle being contracted, continues to pour its contents into the wound. If pulled away with the fingers, the vesicle is pressed, and the same effect takes place, only more quickly. The best way to prevent this, is to *remove the sting by sliding a knife blade on the skin*; the venom bag is thus closed, and if the operation is promptly performed, no swelling will result. As no specific remedy for the sting of the honey bee has yet been discovered, the less the wound is touched or rubbed after removing the sting, the less will be the swelling.

While the bees were gathering in a cluster, I surrounded the mouth of a bag with wire to keep it distended, raised it under the cluster, dislodged the bees by sliding a quill between them and the ceiling, closed the bag, and carried the swarm to my hive. On repeating this operation,

very few bees remained in the room. Then selecting from my old hive a good comb full of honey, I took it to the boys, to mollify their stings and temper. Still, this donation was not sufficient to assuage the anger of the father on his return; for next day I received a visit from two policemen, who announced that as my bees were accused of disturbing the public peace, they were condemned to leave the city immediately.* I however succeeded in obtaining a week's delay, and as some days after, I found a few just hatched queens thrown out on the zinc roof, showing that no swarm was to be expected that season, I determined to let them remain where they were till the ensuing spring.

CHARLES DADANT.

HAMILTON, ILL.

*²³—We take pleasure in announcing that, if the anti-aparian portion of the good people of Wenham lack a legal precedent for municipal bee-banishment, it seems likely, from the incident related above, that they could find it in the records of the police court of the ancient city of Langres, in France. Won't they send a delegation for it?

A New Kind of Bee-Bob.

To keep natural swarms from decamping when they issue, and induce them to settle in a manner convenient for hiving, I take two or three frames filled with comb, adjust them together at the distance apart at which they are usually set in the hive, and fasten them to a light pole of convenient length. When the swarm issues, I present this to the bees ten or twelve feet in front of their hive, and they usually betake themselves to it without hesitation or delay. If the swarm has already settled on a tree, it can commonly be induced to take possession of the combs, by placing the apparatus gently over or against the cluster. Even if settled in a hedge, otherwise difficult of access, they will readily remove to more acceptable quarters, if the frames be presented to them through an opening in the hedge, made by drawing the branches asunder. When the bees have fully taken possession of the comb, they are not apt to leave; and the frames may be again separated, and set in a hive in the usual manner, with the bees adhering to the combs.

J. RODELSPERGER.

When capping worker or drone cells the bees sometimes use newly secreted wax, but more generally take the needed supply from the thickened edges of the cells themselves. Queen cells receive a kind of duplicate capping, being first closed in the ordinary manner with a thin film or scale of wax, over which a thicker outer covering is afterwards placed, with a narrow dead-air space between.

Each of the numerous species of bees has some difference in its habits, its mode of collecting honey, constructing its dwelling, or providing for its young, and other particulars.

[For the American Bee Journal.]

Experience in Italianizing. No. 3.

BY ANOTHER NOVICE.

In my last I promised to give my experience in raising queens, but an attack of sore eyes compelled me to be too late for the May number.

In the early part of last spring, finding my bees had wintered well, I commenced feeding two Italian stocks, in order to stimulate early breeding, that I might have drones early. But in this I failed, for the black drones appeared the same day as the Italians. My object was to raise early queens; and in order to do that, I endeavored to ascertain the easiest mode for a beginner. I found so many modes proposed in the books and the JOURNAL, that I was greatly puzzled how and when to begin.

On the 15th of April I transferred a weak colony to a frame hive, and as I went to remove the splints on the fourth day, I discovered that three or four queen cells had been started. I was surprised that I had lost the queen in the operation, for I had hardly lost a dozen bees besides. Experience has since taught me that the black queens will hide in any place they can find. When transferring a colony ten days ago, I found the queen hid in a crack in the old bottom board, after all the bees had gone in and the hive was set on its stand. It was by mere accident that I chanced to see her, as I supposed she was in with the bees.

But to return to the cells. I noticed them almost every day, and on the twelfth saw where the first had come out and destroyed the others. Thus I had raised my first queen accidentally. The spring being very damp, cold and backward, and there being no hope that drones would appear soon, I destroyed her in about a week or ten days, and gave them a frame of brood and eggs from one of the Italian colonies, hoping the bees would build queen cells; but they failed to do so. In about a week I gave them another frame of brood, and they then started a few cells; but by the time they were ready to be cut out, the last week in May had come and the earliest drones made their appearance.

I now swarmed the two stocks of Italians, each of which had from ten to fifteen cells, a few being sealed over. This was on the 28th of May. Two of the strongest black stocks swarmed on the same day. The rest being in box hives, which I had not yet learned by experience how to swarm, I concluded I would let them alone and see whether they would not swarm naturally, which they did. I now felt at a loss what to do with the great number of queen cells that had appeared all at the same time, say about forty in three hives. I removed the black queens from the new swarms, and put a cell on the top of each between the frames, all of which did well. I formed a few nuclei in small boxes and gave them cells, all of which hatched; but only one queen remained to become fertile—the bees of all the others leaving with the queens on their excursions to meet drones. On opening one of these nuclei about noon, I

observed where the queen had just emerged from her cell, and destroyed the next cell that joined it too closely to be separated. About two inches from it was another cell with a queen just working out. The third queen had just left, accompanied by all the bees in the nucleus. How are we to account for her not destroying the other cell on the same comb, within two inches of her own? Was she unaware of its existence, or did the bees defend it, intending to swarm when there was not a particle of brood in the box? I removed this cell and inserted it in a hole in the top of a box hive that had swarmed a few days previous, and poured in a little honey around the sides, to prevent the bees from killing the queen, knowing that she would get out of her cell in a few minutes. I did this merely as an experiment, not knowing any other way to save her, as there were not bees enough left in the nucleus to nurse her. Three days after, about one o'clock in the afternoon, I observed a beautiful Italian queen enter the hive. Thus my experiment had proved successful. I put cells in the holes of all the box hives in from two to four days after the first swarms issued, and the next evening after the second left—all except one of which hatched; and some of them met Italian drones. Thus I had succeeded in Italianizing my box hives in a way little expected. I had calculated on having to drum out the bees, hunt up the queens, and introduce some reared in nuclei, and keep them caged for twenty-four hours. The use I made of the numerous queen cells that came just at the right time saved me a great deal of trouble. But had I taken bees enough from the two natural swarms that came off the same day on which I divided the two Italians, and formed a few more nuclei, giving each a queen cell and a piece of brood comb, I might have saved more of the cells and all the young queens. As it was, I saved only about ten of them.

I dislike the practice of cutting out brood or eggs from large hives, to rear queens in small nuclei. I prefer having the queen I intend to rear from a nucleus hive about twice or thrice as large as the common nuclei, with frames of the ordinary size, so as to be able to give each nucleus a frame of brood. This has the additional advantage of preventing the bees from leaving with the queen on her exit to meet with drones. I consider this method much less trouble. I tried it from July until September, with a young fertile queen, and reared in all that season thirty-five queens. Four of these were unable to fly, and eight of them were lost on their excursions.

In the fall I removed all the hybrid queens, and attempted to introduce pure queens that had mated with Italian drones. In this attempt, however, I had my first trouble, as the bees killed several of them. I was compelled to give them back their own queens, which I had saved in cages, to be prepared for the emergency. Having no more queens to give them, I tried this on the twenty-four hours system. But this too is not always safe in the fall; though I am willing to risk it at all times in the spring.

I said four of the queens could not fly, from

defective wings. But there were three others, very beautiful and bright ones, on which I could not discover the least defect, that refused to lay at all, after having been kept for two months—one of them having been changed to two other populous hives, to induce her to lay. I concluded they could not fly, and had not been out to meet the drones. But why then did they not lay drone eggs? I killed two of them; and as I was about to destroy the last one, I took her in the house, to show her to some ladies. In a few minutes she flew from the lap of a lady to the door, rested on the top for a moment, then flew back to the apiary, made a circuit there, and went off to parts unknown. Now I had tossed each of them up in the air repeatedly, to see if they could fly. Can any one explain why they would not lay. A.

LOWELL, KY.

[For the American Bee Journal.]

More Questions.

MR. EDITOR:—Looking over the columns of your valuable BEE JOURNAL, I find questions asked and answered—I request the privilege of making a few inquiries. Perhaps some of your readers can give me the desired information.

First.—Can the small hives used for rearing queens, holding three or four frames four or five inches square, be placed anywhere during the winter, so that the bees therein will survive till spring?

Second.—Which one of the following movable comb bee-hives combines the most advantages—the Langstroth hive, the American hive, or the Quinby improvement of the Langstroth hive?

Third.—Which is best for bees, a winter moderately cold, remaining unbroken from fall till spring; or one which affords frequent intervals of warm weather? A. J. FISHER.

EAST LIVERPOOL, OHIO.

Bees Fertilizing Blossoms.

How continually do we observe the bees diligently employed in collecting the red and yellow powder by which the stamens of flowers are covered, loading it on their hind legs, and carrying it to their hive for the purpose of feeding their young! In thus providing for their own progeny, these insects assist materially the process of fructification. Few persons need be reminded that the stamens in certain plants grow on different blossoms from the pistils; and unless the summit of the pistil be touched with the fertilizing dust, the fruit does not swell, nor the seed arrive at maturity. It is by the help of bees, chiefly, that the development of the fruit of many such species is secured, the powder which they have collected from the stamens being unconsciously left by them in visiting the pistils.—SIR CHARLES LYELL.

Mr. Kark, of Stettin, advises that a hive which contained a foulbroody colony, be thoroughly washed with a clear solution of chloride of lime; and then well dried, set open in an airy place, and kept unoccupied by a swarm for at least one year.

[For the American Bee Journal.]

Remarks on a Reply.

In friend Thomas' reply to "Those Seeming Puzzles," he appears to think there might in that case have been two swarms. There was not, however. The hollow or cavity was about eighteen inches high, and wide enough for six combs, five worker and one drone comb. The entrance was a two-inch hole at the top of the cavity, on the south-east side of the tree.

There were other peculiarities about said swarm, that I am going to tell you of. Both the old and the young queen were extraordinary large ones. The upper part of the head of the young queen, where the eyes are situated, was shaped like a drone's. She also had large spreading and perfect drone wings. The workers from this queen were the largest I ever saw, with one exception. Three years ago, last fall, I saw at Dacotah, in this State, in the apiary of Mr. Reed, a swarm of as large bees as those were. If it had not been for Italianizing my apiary, I should have kept that queen to breed from.

Mr. Thomas may be mistaken about the workers guarding the old queen. Last summer my best queen was superseded. I was taking out brood and eggs every few days to raise queens from, and they were storing surplus honey in boxes. But all at once the boxes were deserted. I immediately examined the hive to see if they were preparing to swarm, and found eight perfect queen cells. The old queen was there attending to her regular business. I cut out all the queen cells; but they immediately started new ones; and as fast as they were sealed, I took them out. But I discovered that the old queen stopped laying, and also observed that there were no guards to keep the queen from the cells. Some days I would take out the frame she was on, four or five times a day, without disturbing the bees or using any smoke. There were five cells on the comb that she was on. I frequently saw her pass close by a cell, but she paid no attention to it. And once I saw her deposit an egg in a cell, pass directly over a queen cell, and deposit an egg in a cell on the other side, without paying any attention to the queen cell. About the first of September, I allowed one young queen to mature, and there were no guards over either of the queens until the young queen was fertilized. Then the old queen was enclosed in a cluster or knot of bees, and the next day she was dragged out of the hive, dead.

I acknowledge the receipt of Mr. Thomas' book—a very good and comprehensive work for new beginners.

I have also received, within a short time, no less than six different patent hive circulars, all claiming to be the very best in use.

E. GALLUP.

OSAGE, IOWA.

Bees see best in broad daylight; less distinctly at dark; and, according to some observers, not at all in the dark—the antennæ, as is supposed, then supplying the place of eyes.

[For the American Bee Journal.]

A few Probabilities.**DIFFERENT KINDS OF HIVES.**

1. Straw, twisted and formed in the shape of a high inverted bowl.

2. A square box, made of six boards, forming the sides, the top, and the bottom.

3. A square box, twelve inches inside measurement, fourteen inches high, with two or four boxes placed on the top, covered with a cap. The boxes of the aggregate capacity of twenty pounds.

4. A box, so constructed as to present a larger surface for the surplus honey boxes to rest on, and two tiers of boxes, one above the other. Aggregate capacity, fifty pounds.

5. A box, so constructed with side chambers, as to receive boxes on two sides, the whole height of the hive. Aggregate capacity, seventy pounds.

6. A box, so constructed with side chambers, and a chamber in the top of the hive, as to admit surplus honey boxes on both sides and top of the hive. Aggregate capacity, one hundred and twenty-five pounds.

The first class of hives may include sections of a hollow log standing upon a board for its bottom, with another nailed on its top; or a flour or salt barrel, standing on its end.

Results. 1. The hives with but little room will give many swarms, and little surplus honey.

2. The hives with abundant room, whether in hollow log, barrel, or surplus honey boxes, will give a large amount of surplus, and large swarms, when they do swarm—which will not be often.

CLASSES OF HIVES.

No. 1. The small hives of this class, and of class No. 2, will give many swarms, no surplus honey, and consume the stores gathered for winter. Honey for use, must be secured by driving out, or by destroying the bees.

No. 2. Will give from nothing to forty pounds. Mr. Quinby, in one edition of his work, estimates the average at one dollar's worth. This, at twenty cents per pound, is five pounds. In a revised edition, he estimates it at two dollars' worth, ten pounds. I purchased three colonies in this class of hives in 1824, I think. They gave me one swarm each, and not one ounce of surplus honey; though the four boxes were placed on each hive.

Class No. 4, will occasionally fill their boxes; and in an extra season, may exceed.

So of Nos. 5, and 6. They will occasionally fill their boxes, and sometimes exceed it. Colton's patent is of Class No. 5. The Farmers' hive, patented in 1862, with boxes of from sixty to seventy pounds capacity in the aggregate; and the Eureka hive, patented in 1867, with boxes of one hundred and twenty-five pounds capacity, may both be counted in Class No. 6.

In 1864, thirteen colonies in the Farmers' hive gave seven hundred and ninety-seven pounds of surplus honey—an average of sixty-one pounds. In 1867, my whole number in that hive, including one reported by Mr. House, gave

an average of sixty-eight and a half pounds of surplus—being six hundred and seventy-eight pounds from nine hives.

Four Eureka hives, all in which were swarms in the spring of 1867, gave five hundred pounds of surplus—averaging one hundred and twenty-five pounds each.

CONCLUSIONS.

1. Bees place their brood in the central part of the hive, for warmth and protection from enemies.

2. Store their honey in the upper part, and on the side edges, and outside sheets of their combs.

3. The best arrangement of surplus boxes is on the top and by the sides of the sheets of comb.

4. The surplus honey boxes should be placed in as close proximity to the sheets of comb as may be. The less obstruction the better.

5. If ample room is given for brood in the sheets of comb which form the centre of the hive, there is little danger of brood in the surplus honey boxes. Out of more than two hundred surplus boxes, filled with honey by my bees last season, there was brood in only four; and that was from other causes than from close proximity of the swarm.

6. Bees may be expected to store surplus honey in proportion to the amount of room given them in surplus honey boxes.

7. They will as soon probably commence in a second suit of eighteen boxes, as in a suit of two boxes. The colony that gave one hundred and seventy-four pounds of surplus last season, gave one hundred and twenty-one pounds of white clover honey in the first suit of boxes, and on the removal of those and the supply of twelve empty boxes, they entered them at once, and stored in them fifty-three pounds of buckwheat honey.

8. The boxes should be so arranged as to bring the whole suit equally near to the brood—forming an equal amount of comb on both sides of and above the brood.

I draw the above conclusions from the observations I have had and the experiments I have made.

ALBANY, N. Y.

JASPER HAZEN.

Besides the honey sac, in which the bees collect nectar, water, &c., and convey them to their hives, the abdomen of the bee contains another viscus, the chyle-stomach, or true stomach of the insect, in which the nectar and pollen required for its own nourishment or that of the larvæ, and for the production of wax, are digested. Food partially digested here, is disgorged from this stomach for use of the larvæ; that more completely digested goes to the support of the individual bee; and the excess is converted into a fatty substance, or wax, and is secreted in the wax packets on the under surface of the ventral segments of the abdomen.

A young swarm builds worker combs exclusively at first. Weak swarms and second swarms seldom build drone combs the first year.

[For the American Bee Journal.]

Closed or Open Top Frames.

I noticed an article in the February JOURNAL on side-opening hives, by Mr. J. H. Smith, wherein he seems to think the various articles in the December number on such hives, fixed frames, &c., all refer directly to the American hive, with its fixed frames and other objectionable features, which are useless if the frames are of the right construction—namely, having their tops separated throughout their length, as well as their ends and bottoms. Now I have not the least objection to a man using what hive he pleases, nor is it any of my business. Still I believe it to be the interest of every man, when he purchases a patent bee hive, to procure the best of the kind in the market. The simpler it is in construction the better, provided the desired object is attained.

As to movable comb frames for bee hives, I think any unprejudiced practical apiarian, who has used the different kinds of frames, closed or open top, will admit that the frames invented by Mr. Langstroth are, for practical operations, far superior to the frames above referred to. For a man who does not work the frames at all, doubtless fixed frames are as good as any. But for such a man, why have any frames in the hive? The old box hive is, for such management, decidedly the best, as it affords the least protection to the moths and worms.

Improved hives, without improved management, have done more harm than good. Most bee-keepers, when they purchase a patent hive, seem to think their bees are bound to prosper in spite of mismanagement and neglect. Should their bees die, as is not unfrequently the case under the old system of management—which is just no management at all—they will attribute it, for want of a better reason, to the patent hive.

For a man who has but a few hives to superintend, and has plenty of spare time, which unfortunately is not the case with most bee-keepers, such hives might do. But the case is very different where a man has a large apiary to superintend, and but little time to devote to his bees. I can superintend forty colonies in the Langstroth hive in the same time that it would take me to perform a like operation in a dozen hives containing closed top frames, and not kill one-fourth as many bees.

Mr. Smith says there are but few cases in which there is a necessity for looking at a particular comb. He must be poorly informed in regard to the first principles of practical bee-culture, to make such an unguarded assertion. The accidental breaking of a comb, he says, might be one. Now, in that case, it would be much easier and quicker, to slide one frame a little to the right and another as much to the left, and lift out one comb at the side, whereby you have ample room to remove the broken comb, than it is to commence at one side of the hive and take out every comb till you come to the one you wish to remove. Again, when you replace the combs, you have to be as careful to set every

comb in its old position, as you would the machinery of a clock, especially if it is an old stock. If you do not follow this rule, you have to use the knife in replacing nearly every comb.

Then, again, in the spring or fall, when you wish to air late or weak swarms by inserting combs well stored with honey and bee-bread, it is often impossible to introduce the comb without resorting to the knife, and thus causing the honey to run from the uncapped cells—the odor of which attracts bees from other hives, perhaps to the ruin of the colony you wish to aid.

Suppose, further, you wish to remove a queen from a hive. You have to commence at one side of the hive of course, and perhaps remove nearly every comb in it, before you find her. Consider also the time and trouble required to close up the hive again, after you have found and removed her. You have to use the knife in replacing nearly every comb, to say nothing about the time spent in hunting her. When looking for a queen I have found it to be the better plan to commence in the centre of the hive, as she is almost invariably found on one of the brood combs. In such operations the Langstroth hive speaks for itself.

Sometimes you desire to strengthen a weak colony in the spring, by inserting combs well filled with maturing brood. In such cases the disadvantage of side opening hives and fixed frames is obvious enough. You will only find the brood combs in the centre of the hive at this time of the year, and, more than all this, it is all important that the brood comb you are introducing should be placed in the centre of the hive you wish to strengthen. Thus you have necessarily to encounter the difficulty twice, before the operation is completed.

Again supposing you are raising queens to supply your artificial colony or the parent stock with a fertile queen. In every operation connected with this, the disadvantage of closed frames will be plainly enough exhibited; and the Langstroth frames will be found permanently superior. I have used Langstroth frames fourteen inches high, with little more trouble than those in the shallow form of hive as now used by Mr. Langstroth. To steady the frames put a stick across the bottom of the hive, transversely to the direction of the frames, leaving a space of a quarter of an inch between the top of the stick and the bottom of the frames. Take some small wire, cut it in pieces two inches long, bend these in the shape of the letter V, form a small ring on each end, and fasten with small tacks, so that the sharp end extends up between the bottom of the frames. This will hold the frames steady, tip the hive as you will.

I would say, in this connection, that I believe I can obtain more surplus honey from the shallow form of the Langstroth hive than from any other I have tried.

HENRY S. LEE.

EVANSBURG, PA.

It is an error to say that queens and drones will not feed themselves. I have often seen queens eating honey out of open cells; and have noticed drones doing so hundreds of times.—BERLEFSCH.

[For the American Bee Journal.]

Upward Ventilation.

Without presuming to advance any ideas that are new, I wish to say a few words respecting moisture in hives.

Every observant apiarist knows that vapor is constantly generated and thrown off by the cluster of bees. This vapor comes in contact with cooler air, and is condensed; and in severe cold weather it accumulates in the hive in the form of frost, often within an inch or two of the cluster. If the cold weather is very long continued, and the bees consume what little honey there is in the combs covered by the cluster, the colony starves with plenty of honey in the hive. If the cold weather is of short duration, and a day following sufficiently warm with the heat from the bees, to melt the frost, the water runs down the sides of the hive to the bottom board. There it again freezes, sometimes closing the entrance of the hive with ice, and causing the death of the bees by suffocation.

If we house them during the winter, unless we ventilate upwards, we still have the moisture, and often have mouldy combs. But when housed, even in a room where it does occasionally freeze, if we give them abundant upward ventilation, we get rid of the whole difficulty, without any perceptible injury to the colony. At least this has been my experience for the last eight years.

I introduced an Italian queen to a colony of native bees, in October, 1866. On the first of December there were no Italian bees or brood to be found in the hive. They were housed, with the honey board removed, in a room where it often freezes in winter. About the twentieth of February, they were set out for an airing. The colony was quite as strong as when they were housed, and at least one-fourth of the bees were Italians. On examination, the combs showed brood throughout a large part of the cluster, proving conclusively, in this instance at least, that, with all the upward ventilation that could be given them, there was sufficient moisture and heat retained in the hive for breeding purposes.

I have wintered bees in the room referred to, both with and without ventilation, and much prefer the former method.

We are referred to the home of the bee in the woods, to show that such ventilation is not necessary. But, what is that home? My first bee tree was found in 1842. Since that time I have found and helped to find and cut nearly a hundred more. Many of them were much better homes for bees than any I have ever seen constructed by man. If our hives were made of some material that would absorb all the moisture generated in them, upward ventilation would be unnecessary. And this is precisely the condition of many of these natural homes. The hollow is formed by the decay of the timber, and is lined with wood more or less decayed; and this dry rotten wood is one of the best moisture absorbing materials that could be used.

In the study of bees, in contemplating the re-

sults of their labors, we learn to look beyond them to the Great Creative Power. Even nature's home for them shows us the wisdom of the Creator, who, in providing them with a habitation, has supplied them with one so well adapted to *their* requirements. And it should teach the apiculturist—whether he winter his bees in doors or out—to adopt some means to keep the interior of his hives dry.

J. H. TOWNLEY.

TOMPKINS, MICH.

[For the American Bee Journal.]

Patent Hives and Claims.

MR. EDITOR:—I am already convinced, from my short experience in bee-culture, that, to make this pursuit profitable, we need the best bee hive that can be invented for the use of the apiculturist and habitation of the bee. We are greeted on every hand by the claims of patent venders, and of course they are not all *best* for *successful* operation with bees. For the new beginner, who has no experience of his own, I find it is not only a great waste of time but a great waste of money, to be compelled to purchase every patent that may be presented, if we would learn which is best. I therefore think that you would greatly enhance the public interest in bee-culture, by calling on every owner of *patent* claims to present a copy of them for publication in the BEE JOURNAL, with explanations, and *cuts illustrative* of the hives, and of the *different portions* of the same that may need illustration, to render them more easily understood. We could then, from such explanations and illustrations, judge better of the value of the claims and the worth of the hive; and more easily decide what is adapted to our wants. We might thus too be enabled to avoid an unnecessary expenditure of money, while promoting our best interests in scientific and practical bee-culture.

Of course no patentee could object to this, if he thinks his patent worthy of public confidence and patronage; for their public exhibition, in comparison with the claims of others, would bring their good qualities into more general notice and adoption. These illustrations would also be gratifying to the readers of the JOURNAL, since all like to have before them a picture of what they are reading about. And to bee-keepers it is especially important to have placed before them every patent claim, so that each can ascertain whether he is trespassing on the rights of others, by inadvertently using that to which some patentee has a legal claim. All those claims also that need explanation, should be so plainly presented that the construction and use of the different fixtures may be readily understood, and every patentee should be willing and ready to do this in the pages of a Journal designed to promote bee-culture and devoted to the interest of bee-keepers.

J. DAVIS.

CHARLESTON, ILL.

The smell of balm is very agreeable to bees, and it is well to have this fragrant plant growing in the neighborhood of the apiary.

[For the American Bee Journal.]

Langstroth Hives, &c.

MR. EDITOR:—In the February number of the BEE JOURNAL, 1868, page 157, Mr. E. Gallup says:—"why Mr. Langstroth does not furnish his agents with some other form of hive besides the broad shallow things that I have seen, is more than I can understand." Now I presume that Mr. Langstroth knows his own business, and furnishes that form of hive which is mostly ordered by his customers. I found it so, at least, and received just such a hive as I ordered. And, furthermore, I have no reason to find fault with the above mentioned form of hive—from a single one of which I have taken more than thirty-two dollars (\$32) worth of honey last season. Nor have I ever had a stock starved or frozen to death in them, though I have used them now three years. My bees are the common black bees. I have no Italians, nor have I ever seen any; but do not think I shall have this to say at this time next year.

I presume if Mr. Gallup prefers a shorter and deeper Langstroth hive, he can be accommodated by Mr. Langstroth, or his agent; as the Langstroth hive is not by any means confined to the broad shallow form.

Again, my opinion is that bees do not fancy climbing up two or three flight of stairs, after they have reached their hives with a heavy load. At least, I am willing to unload when I get up one flight of stairs, if there is any chance to do so. I have seen a style of hives that were staked and ridged with fence rails to keep the wind from blowing them over; but I have no fancy for such contrivances to keep bees in.

When I read Mr. Quinby's able work on bees, I did not understand it as Mr. Gallup seems to do. Where Mr. Quinby speaks of his two-story bee house, he says it would be ornamental, and a few pages back—I think on page 107—he objects to bee houses, for several reasons, and says they will not pay. I know that young and even old bee-keepers of the present time, can get much valuable information from Mr. Quinby's book.

To Mr. Langstroth belongs the credit of introducing to us the movable comb system; for if each and every feature of the Langstroth invention is taken from other movable comb hives, there is, in my estimation, precious little left to buy a right to use. In view of all the light he has given us on the movable comb system, I can see no improvements made by any one else.

Again, it is the same with bee books. Almost any tolerably good scholar could take Mr. Langstroth and Mr. Quinby's books and write another from them; and he would be thought quite an author by a person who saw his production, and had never seen the former. But let him see the originals, and he could pretty well guess where the other came from. Hence I think Mr. Langstroth is the man who deserves the pay and honor.

Now a practical suggestion. To contract the entrance of a Langstroth hive, to prevent other bees from robbing a weak colony, reverse the movable blocks, with the wide ends next each

other, place them close to the hive and half an inch or so apart; lay on the top of the blocks a piece of board or shingle, thus forming a narrow hall or passage, where it would be almost impossible for a strange bee to enter a hive without being detected.

Let me add my closing advice to beginners in bee-culture: Procure Mr. Langstroth's book on the Hive and the Honey Bee, Mr. Quinby's *Mysteries of Bee-Keeping*, and take the AMERICAN BEE JOURNAL, and if there is any *enterprize* and *energy* in you, you can have honey and make money.

M. WILSON.

DENISON, ILL.

[For the American Bee Journal.]

Height of Hives.

In the January number of the BEE JOURNAL, Querist expressed a wish that the readers of the JOURNAL would give their views as the best *size* and *form* of hives. Mr. Quinby says the advantages of bee-keeping depend as much upon the construction of the hives, as on any one thing. And in the February number, Mr. Langstroth suggests that some of his hives be made higher and more compact, for the purpose of testing their adaptability for wintering bees, on their summer stands, in the open air.

Now, although this is a move in the right direction, I think that fifteen inches, the height Mr. Langstroth named for the proposed change in the form of his hive, is running to an extreme. I have used hives just fifteen inches in height, but the amount of surplus honey obtained from hives of so great height would not satisfy bee-keepers of the present day. Of course hives so low and widespread as to secure the greatest amount possible of surplus honey, are not profitable, if the hives are to remain on their stands during the winter; as it would be next to impossible to get anything like a full swarm through the winter, with the breath of life in them.

I think that, to avoid extremes in the height of hives, we should not vary much from twelve inches. I have a letter from E. Kirby, of Henrietta, N. Y., who had experimented a great deal in the height of hives. He decided that twelve inches was best. The usual height of the Langstroth hive is ten inches. Two inches in the height of a hive makes a material difference. Movable frame hives are not quite as warm as those without frames; as the vacant space around the frames admits a comparatively free escape of animal heat, and is so much additional space for the animal heat of the swarm to extend over, and thus renders the swarm less able to maintain the requisite degree of warmth.

ISAAC IDE.

MEDINA, N. Y.

Crippled and disabled workers are not tolerated in the bee commonwealth. They are at once condemned and ejected by the community, as not only useless but injurious members, for whom no compassion is felt and no mercy is in store. Crippled queens are reserved and cherished, though when become superannuated and unproductive, they too are discarded.

THE AMERICAN BEE JOURNAL.

WASHINGTON, JUNE, 1868.

THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at \$2 per annum. All communications should be addressed to the Editor, at that place.

Several valuable communications were received too late for this number of the JOURNAL, and some articles now in type are unavoidably omitted.

The queen bee received last month by express, from Mr. Grimm, died on the second day after her arrival, before any steps could be taken to ascertain why her eggs would not hatch, as she laid none during her journey, nor subsequently. An examination of her spermatheca left it doubtful whether she had been fertilized.

No similar case appears to have come under the observation of any German apiarian. The Baron of Berlepsch, in his very comprehensive treatise on Bees and Bee-culture, published in 1860, says expressly that every egg laid by a queen will hatch; and so far as we can recollect there is nothing in the *Bienenzeitung* since indicating a different opinion or intimating a doubt. Yet we have heard of several instances in this country, besides that of Mr. Grimm, where eggs laid by an apparently healthy queen did not hatch; and we have now a queen in our apiary which lays freely, though a majority of her eggs are not placed on the bottom of the cells, but on the side. Those so misplaced we suspect do not hatch, as the capped brood appears to be irregularly placed in the combs, and the population of the hive is certainly diminishing.

Mr. Marvin, of St. Charles, Illinois, had a queen last fall which laid eggs that did not hatch. She was unable to fly, and was probably unfertilized.

Milkpan vs. Honeypot.

To the class of popular prejudices against honey bees belongs the singular notion, prevalent among dairymen, that white clover, on whose blossoms those busy insects have been foraging, is less valuable as food for milch cows than it would otherwise have been; or that a

herd will yield less milk, cream, and butter, in a white clover region stocked with bees, than in one in which no bees are kept. This conceit, we apprehend, is on a par with that of the fruit-growers, who imagine that bees injure blossoms and deteriorate crops.

The nectar of flowers is generally regarded as a *secretion* intended by nature to attract bees and other insects, to secure the fertilization of plants. Yet in reality it is an *excretion*, designed to rid the plant of superfluous matter by natural process. It is extruded and thrown off, because not needed, or no longer needed, for the growth and development of the plant as a herbaceous or vegetable production; though, in this extruded condition, it still subserves the important purpose of reproduction, by securing fertilization, through the instrumentality of honey-loving and honey-gathering insects. But here its office or function ends, and whatever has not been gathered by the insect tribes, is almost immediately dissipated or desiccated. In some blossoms it is so exceedingly volatile that it evaporates early in the day, and bees are never seen exploring them after noon. What is not gathered to-day is lost; it cannot be gathered to-morrow. Still it is not *re-absorbed*. It does not re-enter the plant, and again form part of its substance. If, on drying, a minute portion of it may be supposed to remain on the nectary, the infinitesimally thin film of saccharine matter thus deposited, is speedily dissolved and washed away by dews and rain, or falls to the ground with the unfertilized blossoms. Precious little of it would find its way into the dairyman's milk pail, cream pot, or butter churn, though not a bee had ever existed, or the whole race were banished from the land by exasperated town meetings.

It is universally conceded that the white clover is a much more valuable forage plant for milch cows, than the red. Yet the latter loses, by insect abstraction, comparatively little of the saccharine element so abundantly secreted or excreted in the nectaries of its blossoms. Hence, on the dairymen's theory, it should, so far as the sweets of a honey-bearing herbage are concerned, be at least fifty-fold more valuable than the former. While a white clover patch in bloom is swarming and musical with honey bees, scarcely a few dozen "droning humlers" can be found on an acre of the red, though in full flower and redolent with sweet savor. If then the retention of the saccharine element so essentially conditions the value of the forage, as one of its milk producing constituents, that the market price of cream and butter is affected

by what the bees carry off, how comes it that the milk product of the non-deprived red clover is so greatly inferior, both in quality and quantity, to that of the incessantly despoiled white? Here is a fair test, open to every one anxious to search out the "secret things of nature." The facts, too, are so palpable and plain that even a Wenhamite of the two-thirds order might be expected to draw some pretty conclusive inferences from them.

Obviously the milk producing qualities of a plant do not depend on the retention or abstraction of the saccharine matter secreted or excreted in the nectary of the blossom. That is the mere excess—the foison—which the plant no longer needs. Whether the sun dries it up, or the rains wash it off, or the bees carry it away, the result is all the same in the milkpan—though, in default of the latter, the difference would be considerable in the hive and the honeypot.

[For the American Bee Journal.]

Patent Monopoly.—Langstroth's Hive.

I have rarely been more deeply interested in any article than in that which appears on page 219 of the present volume of the BEE JOURNAL, in relation to the hive invented by Mr. Langstroth. That he should now, after fourteen years faithful labor, be actually poorer than when he first began the work, does not speak well for the honesty of American bee-keepers. One thing that strikes me most forcibly is the seeming ignorance of most of the writers in the BEE JOURNAL in regard to the points in which we are indebted to Mr. Langstroth. I have examined the subject with a good deal of care, and am fully convinced that every man who uses comb frames constructed and arranged as in the Langstroth hive, is using that which does not belong to him. And yet we find men discussing the merits of different hives, and contrasting them with Langstroth's, while at the same time these very hives owe their most valuable feature to Langstroth's ingenuity. I know that differences of shape, material, and interior arrangement, may properly be the subject of discussion and comparison with Langstroth's form. But in this discussion we are too apt to forget that to Mr. Langstroth we owe that which is far more important than any mere form or arrangement. Take away from our bee-keepers the knowledge of the movable frames, and where would we be?

I have no pecuniary interest in the matter. I am not even personally acquainted with Mr. Langstroth. I speak in simple justice to a worthy man, to whom we all owe a deep debt not only of *gratitude* but of *cash*. Can we not afford to be honest?

JOHN PHIN,
Professor of Agriculture,
Pennsylvania Agricultural College.

The Spider and the Bee: or, look not on outward appearance.

A FABLE.

BY ELLEN ROBERTS.

It chanced a Spider and a Bee
Once settled on the self same tree,
And then began a warm debate
Which could the fairer work create.

The Spider boasted, none so well
Of geometric form could tell,
Or could so cunningly design
How squares with circles should combine.
She said the webs she daily wove
Her skill, in this respect, would prove;
And, farther, from her own slight frame
The silken threads to spin it came.
Whereas the honey of the Bee
Was stolen from each flower and tree;
Nay, that she was obliged, indeed,
To borrow from the humblest weed.

The Bee replied, she never thought
Such charge against her could be brought;
That as to stealing honey sweet
From every flower she chanced to meet,
Her skill was so conspicuous here,
She'd nothing from such charge to fear.
So delicately she distill'd,
And her slight bag with honey fill'd,
That never had a flower complained
That by her means its juice was drained!
No leaf had been at any cost.
As to the webs the Spider spun,
Her combs as skilfully were done.
Indeed the merits of her cause
Might rest on mathematic laws;
For these were never disobey'd
In any hexagon she made.
But, what was chiefly on her side,
Her works were usefully applied;
She labor'd for the public good,
And stored her cells for winter's food.

Taught by this fable, let us aim
At virtue, rather than at fame;
Caught by no outward show or glare.
Appearances may promise fair;
The dazzling are not always bright,
But glitter with delusive light;
Let's estimate things by their use
Not the effect they can produce.

[For the American Bee Journal.]

Transferring Combs.

MR. EDITOR:—The following I find is a better way of transferring combs from box hives to frames, than any I have seen described.

Cut strips of thick and strong hardware paper, or such as paper flour bags are made of, and tack across the frames horizontally and vertically. Turn over the frame and adjust the comb in it; tack other strips across, and the work is done. The strips should be about half an inch wide. After using these once, no one will return to strings.

JOHN M. PRICE.
BUFFALO GROVE, IOWA.

[For the American Bee Journal.]

Answer to Correspondent. No. 2.

Do bees injure the fruit crop by taking honey from the flowers?

A lady came to a neighboring bee-keeper's house and requested him to shut up his six stocks of bees, as they were taking the sweet out of the flowers, and *it made the currants sour!* When asked if she could prove them to be his bees, she replied of course they were his, as the hives were in the adjoining garden. The lady, with her little knowledge on the subject, did not think that the bees of my several hundred stocks could fly the distance of less than a mile, to rob her currant bushes of the sweets, and thus left her currants to grow sour. That is the theory also of the failure of fruit crops, grain, or seed, from the fancied bad effect of the removal of honey from the flowers.

I have grown seventy-five bushels of currants, twenty-five of gooseberries, and apples, pears, cherries, and all kind of fruit that can be grown here, in abundance; and the same year had six hundred and fifty stocks of bees within working distance of the fruit garden. I have not had an entire failure of the various kinds of fruit since I have kept bees. I have some seasons had large crops, while at other places on the prairies, with no buildings, trees, or streams of water, with few or no bees kept near, I have seen failures of fruit from various causes, such as cold dry winds, frosts, hot dry winds, "rotten root," "wet feet," (land not well drained), scales or bark lice, various kinds of aphides or plant lice, that suck the juices from the leaves, tender branches, fruit stems, buds and flowers, and eject a sweet liquid resembling honey, of which the bees are fond. I have seen large apple orchards on the bleak prairies that bore no fruit, or only at intervals, until the shelter belts of timber and hedges grew up. Now varieties bear often that were entire failures before such growth of protection. While some orchards bore fruit only on the east side rows in some seasons, in others the produce would only be on the south side rows. Why not say the bees gathered all the honey from the barren rows? The red clover yielded surplus honey for boxes the first time for twenty years, and also the largest crop of seed. The melilot clover yielded the largest crop of seed, and also honey, for several years. One year I saw the white clover in flower for fifteen days; but no bees were at work on it during that time, and *no seed was formed*. A change in the atmosphere gave a yield of honey, and in a few days the flowerets turned down with the growth and weight of seeds—of which each pod contained many. I have seen buckwheat that had been sown in the spring, and also such as was sown in the latter part of the summer, in flower for thirty days at a time, and no honey gathered or seed set. Yet a change in the atmosphere gave a yield of honey, and also of grain in proportion.

Can persons who think bees injure fruit, poison our bees?

I think not. Bees gather poisonous honey in some districts, but that has no injurious effect

on themselves; yet it is injurious to man, unless the poison is removed by boiling or the use of chemicals.

Most bee-keepers can tell what their bees are at work on, and may track them to the poison dish, if such a thing could be done as to poison them. An enlightened neighborhood would not tolerate an ignorant and vicious person in their midst, who would attempt so wicked an act as to endanger the lives of the whole community, that might partake of the honey so stored, if it could be done. The proper remedy for such persons is, to educate them by lending or giving them books, or if they cannot read, practical lessons in fruit growing and bee-keeping. Get them to go to fruit growers' and bee-keepers' conferences; lend or give them a stock of bees; give them knowledge, as that will give them power to overcome their prejudices.

ST. CHARLES, ILL.

JAS. M. MARVIN.

[For the American Bee Journal.]

Wintering Bees.

Last winter I placed twelve stocks of bees in a pit, as directed by Bidwell Brothers, in the *American Agriculturist Annual* for 1867. My soil being heavy, and not high enough to drain very thoroughly, I removed them as soon as spring began to open, and found them in good condition, though beginning to mould.

I am thinking of constructing a house for future use, with walls five or six inches apart, filled in with saw dust; and would be glad to know from those who have had experience in using such winter quarters, about how long in the spring bees can be kept in such a house without becoming too restless. If it were practicable, I would like to keep my bees housed until the appearance of fruit blossoms, and thus avoid the chilling winds which so surely follow the sunny days of March.

I would also like to hear further from Messrs. Bidwell Brothers, in regard to the feasibility of burying bees in heavy clay lands.

SELMA, OHIO.

C. E. THORNE.

[For the American Bee Journal.]

Make of Hives.

Being a new hand in the bee-keeping business, I have become very much interested in the contents of the BEE JOURNAL and more particularly in the writings of E. Gallup and J. H. Thomas. I notice that they differ on three important points, to be considered by those just engaging in the business, viz: the size of the hive, the use of the slanting bottom boards, and fixed or equal distanced frames. Mr. Thomas advocates a hive of two thousand cubic inches comb capacity, the use of a slanting bottom board, and fixed frames. Mr. Gallup is in favor of a hive of greater capacity, and deprecates the use of the slanting bottom board and fixed frames. If these gentlemen would give their views more definitely on those points, through the BEE JOURNAL, they would confer a favor on more than one

NEW BEGINNER.

DIAMOND LAKE, ILLS.

[For the American Bee Journal.]

How can we determine the amount of Honey in a field?

Bees in common swarming hives will generally double their numbers annually, until they demand the whole product of honey for their support. The doubling, or partial doubling, beyond this, carries them beyond their means of support. Some strong swarms will gather enough for winter, and a small amount of surplus. Some enough to go through the winter with some feeding. Others so weak that the moths get the start of them, and they perish. A number must be broken up, or starve to death.

Last year I had no luck with my bees. I never saw so poor a season. There was but very little honey in the flowers. I have hardly known a worse season.

Might not the keeper suppose that before this bad luck commences, he had measured the limits of his field; and thus limit the number of his colonies, if he would secure success? Suppose forty colonies had been the number fairly supplied, and above this number failure and bad luck attended him; would it not be proper to limit his number to forty colonies?

Might he not make this a basis of his estimate? Forty colonies at sixty pounds each, for winter consumption, and with the breeding season, will amount to two thousand four hundred pounds. My surplus was five hundred pounds. Whole amount collected by the bees two thousand nine hundred pounds. May he not enquire—I obtain five hundred pounds out of two thousand nine hundred pounds yield! A trifle more than one-sixth! Is there no way to do better than this?

Permit me, in answer to this, to refer to actual experiment. In 1866, I built four new hives, so constructed as to give box room for from one hundred and twenty-five pounds to one hundred and thirty pounds, in eighteen boxes. The four colonies in them in the season of 1867, gave four new swarms and five hundred pounds of surplus. At an estimate of sixty pounds per swarm for consumption, the eight old and new require four hundred and eighty pounds for home consumption and give five hundred pound—or more than half—in surplus.

Put twelve colonies of bees in the last named hives, and you may secure nearly five hundred pounds—or more than half—in surplus. Can any one question whether it is best to be at the expense of twelve hives and obtain one thousand five hundred pounds of surplus honey; or of forty hives, and obtain only five hundred pounds.

JASPER HAZEN.

ALBANY, N. Y.

Fertile workers are not usually very prolific, many of them scarcely laying an hundred eggs each in the course of their lives, when placed in the most favorable circumstances. The brood consequently is irregularly disposed of in the combs. But Berlepsch says he knows of one instance in which such a worker was highly prolific, the brood filling an entire comb, and being compactly placed in the cells.

[For the American Bee Journal.]

Artificial Swarms.

I have just received a circular from M. M. Baldrige, St. Charles, Illinois, in which, among other things, I find the prospectus of a book which Mr. Baldrige is about to issue, giving instructions about making artificial swarms, and securing straight combs in frame hives.

By these instructions "any person, even the novice, may divide a hive quickly and with safety; and, with one exception, without spending a moment's time in hunting the queen."

But, what about that "one exception," Mr. Baldrige? *Sometimes* exceptions are so frequent as to be hard to distinguish from the rule; and I would like to know how often this one is likely to occur. Quinby and King each give methods for making artificial swarms without hunting up the queen.

And I would also be glad to know whether you propose to give us a better way of producing straight combs, than the well-known and simple one of raising one end of the hive.

SELMA, OHIO.

C. E. THORNE.

[For the American Bee Journal.]

Italian Bees and Red Clover.

MR. EDITOR:—In the December number, vol. 3, of the BEE JOURNAL, page 137, your correspondent "Bee-keeper" asks for "more light" on the subject of Italian bees working on the second crop of red clover.

My answer to Mr. McCune, vol. 3, page 58, seems to have satisfied him; but my answer is not entirely satisfactory to "Bee-keeper." This question is presented by him—"Are there any black bees in his (Mr. Langstroth's) neighborhood?" I reply—*there are!* and if my memory serves me aright, Messrs. L. & Son had just received a colony of black bees into their apiary a few days before I visited them, and had introduced an Italian queen bee into it.

I have yet to see the first native bee in this country work on red clover, and I had observed this fact before I ever heard of the Italian bee. And the fact of the Italians working freely on the bloom of the second crop of red clover, forever determines their superiority over the native bee.

This country abounds in luxuriant fields of red clover, the second crop of which is in full bloom just at the season when other flowers are failing, and weak colonies are enabled to gather a good supply of stores for winter use.

I am not yet satisfied of the superiority of the Italian over the native bee in many other points claimed by others; but think I will be enabled to determine after handling them another season.

If you find anything in these few remarks which will be of interest to bee-keepers, you can give it to the public. If not throw it aside with the rubbish. I am much pleased with your "JOURNAL," and would not be without it for three times its cost.

G. B. LONG.

HOPKINSVILLE, ILL.

